INTERNATIONAL STANDARD

**ISO 14716**

First edition
1998-12-15

# Oil of galbanum (*Ferula galbaniflua* Boiss. et Buhse)

*Huile essentielle de galbanum (*Ferula galbaniflua *Boiss. et Buhse)*



Reference number
ISO 14716:1998(E)

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 14716 was prepared by Technical Committee ISO/TC 54, *Essential oils*.

Annexes A and B of this International Standard are for information only.





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# Oil of galbanum (*Ferula galbaniflua* Boiss. et Buhse)

## 1 Scope

This International Standard specifies certain characteristics of the oil of galbanum (*Ferula galbaniflua* Boiss. et Buhse) in order to facilitate assessment of its quality.

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 210, *Essential oils — General rules for packaging, conditioning and storage.*

ISO 211, *Essential oils — General rules for labelling and marking containers.*

ISO 212, *Essential oils — Sampling.*

ISO 279, *Essential oils — Determination of relative density at 20 °C — Reference method.*

ISO 280, *Essential oils — Determination of refractive index.*

ISO 592, *Essential oils — Determination of optical rotation.*

ISO 1242, *Essential oils — Determination of acid value.*

ISO 11024-1, *Essential oils — General guidance on chromatographic profiles — Part 1: Preparation of chromatographic profiles for presentation in standards.*

ISO 11024-2, *Essential oils — General guidance on chromatographic profiles — Part 2: Utilization of chromatographic profiles of samples of essential oils.*

## 3 Term and definition

For the purposes of this International Standard, the following term and definition apply.

**3.1**
**essential oil of galbanum**
essential oil obtained by steam distillation of the gum of *Ferula galbaniflua* Boiss. et Buhse, of the Apiaceae family

## 4 Requirements

### 4.1 Appearance

Liquid.

### 4.2 Colour

Colourless to light yellow.

### 4.3 Odour

Turpentine-like, balsamic, with a characteristic green note.

### 4.4 Relative density at 20 °C, $d_{20}^{20}$

| | |
|---|---|
| Minimum: | 0,867 0 |
| Maximum: | 0,890 0 |

### 4.5 Refractive index at 20 °C

| | |
|---|---|
| Minimum: | 1,478 0 |
| Maximum: | 1,485 0 |

### 4.6 Optical rotation at 20 °C

Between +7° and +17°.

### 4.7 Acid value

Less than or equal to 2.

### 4.8 Chromatographic profile

Analysis of the essential oil shall be carried out by gas chromatography. In the chromatogram obtained, the representative and characteristic components shown in Table 1 shall be identified. The proportions of these components, indicated by the integrator, shall be as shown in Table 1. This constitutes the chromatographic profile of the essential oil.

### 4.9 Flashpoint

Information on the flashpoint is given in annex B.

## 5 Sampling

See ISO 212.

Minimum volume of test sample: 25 ml.

NOTE This volume allows each of the tests specified in this International Standard to be carried out at least once.

## 6 Test methods

### 6.1 Relative density at 20 °C, $d_{20}^{20}$

See ISO 279.

### 6.2 Refractive index at 20 °C

See ISO 280.

### 6.3 Optical rotation at 20 °C

See ISO 592.

### 6.4 Acid value

See ISO 1242.

Test sample: 1 g.

### 6.5 Chromatographic profile

See ISO 11024-1 and ISO 11024-2.

## 7 Packaging, labelling, marking and storage

See ISO 210 and ISO 211.

The essential oil should be kept in a cool dry place, in hermetically sealed and preferably full containers. Keep away from light.

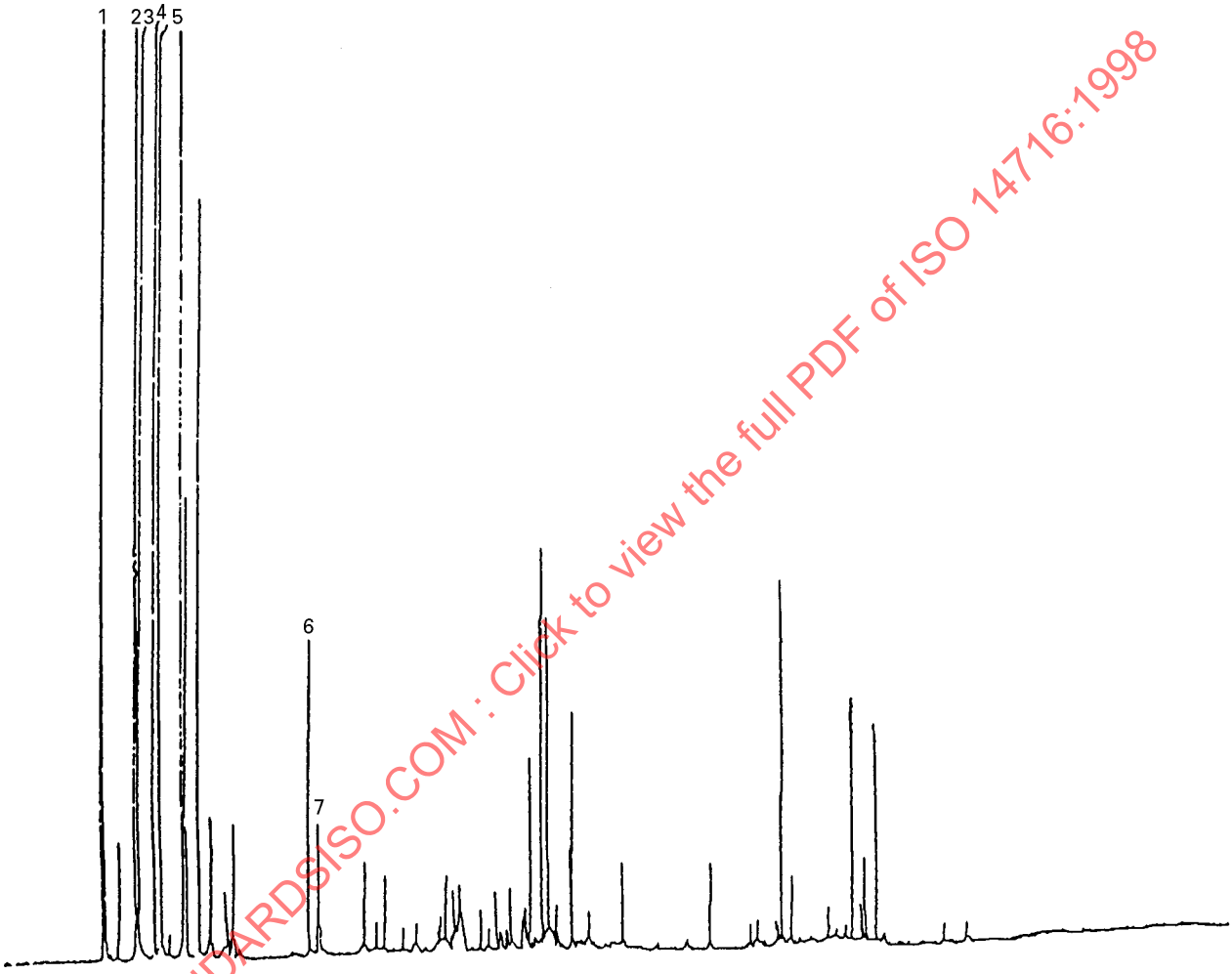


**Table 1 — Chromatographic profile**

| Component | Minimum % | Maximum % |
|---|---|---|
| α-Pinene | 5 | 21 |
| β-Pinene | 40 | 70 |
| Sabinene | 0,3 | 3 |
| δ-3-Carene | 2 | 16 |
| Myrcene | 2,5 | 3,5 |
| *trans-cis*-1,3,5-Undecatriene | 0,4 | 2 |
| Ratio of *trans-cis*-1,3,5-undecatriene to *trans-trans*-1,3,5-undecatriene | 2,0 to 5,5 | |
| NOTE The chromatographic profile is normative, contrary to typical chromatograms given for information in annex A. | | |

# Annex A
(informative)

## Typical chromatogram of the analysis by gas chromatography of the essential oil of galbanum (*Ferula galbaniflua* Boiss. et Buhse)






**Peak identification**

1 α-Pinene
2 β-Pinene
3 Sabinene
4 δ-3-Carene
5 Myrcene
6 *trans-cis*-1,3,5-Undecatriene
7 *trans-trans*-1,3,5-Undecatriene

**Operating conditions**

Column: capillary; fused silica; length 60 m; internal diameter 0,25 mm
Stationary phase: polyethylene glycol bonded (Supelcowax 10)
Film thickness: 0,25 µm
Oven temperature: temperature programming from 60 °C to 230 °C at 2 °C/min
Injector temperature: 230 °C
Detector temperature: 250 °C
Detector: flame ionization type
Carrier gas: hydrogen
Volume injected: 0,2 µl
Split ratio: 1/150

**Figure A.1 — Typical chromatogram**